Claims

1. Recombinant soluble Fc receptor characterized by the absence of transmembrane domains, signal peptide and glycosylation.

2. Recombinant Fc receptor according to claim 1, wherein the receptor is a FcγR or a FcϵR.

3. Recombinant Fc receptor according to claim 1 or 2, wherein the receptor is a FcγRIIb.

4. Recombinant Fc receptor according to any one of claims 1 to 3, wherein the receptor is of human origin.

5. Recombinant Fc receptor according to any one of claims 1 to 4, wherein it contains one of the amino acids as shown in one of SEQ ID NOs:1-6.

6. Recombinant nucleic acid containing a sequence encoding a recombinant Fc receptor according to any one of claims 1 to 5, wherein it is contained on a prokaryotic expression vector, preferably a pET vector.

7. Recombinant nucleic acid according to claim 6, wherein it contains one of the sequences as shown in one of SEQ ID NOs:7-12.

8. Recombinant nucleic acid according to claim 6 or 7, wherein it additionally contains expression control sequences operably linked to the sequence encoding the recombinant Fc receptor.

9. Host cell characterized by the presence of a recombinant nucleic acid according to any one of claims 6 to 8, wherein it is a prokaryotic host cell, preferably an E. coli cell.

10. Process for the determination of the amount of antibodies of a certain Ig class in the blood, plasma or serum of a patient, characterized by the use of a recombinant soluble Fc receptor according to any one of claims 1 to 5 in an immunoassay and determination of the presence of FcR-antibody complexes.

11. Process according to claim 10, wherein the immunoassay is an ELISA and preferably a sandwich assay.

12. Process according to claim 10 or 11, wherein the antibodies to be determined are IgE antibodies and the recombinant soluble receptor is a FcϵR.

13. Process according to claim 12 for the determination of a predisposition or manifestation of an allergy.

14. Process according to claim 10 or 11, wherein the antibodies to be determined are IgG antibodies and the recombinant soluble receptor is a FcγR.

15. Process for the determination of the immune status of patients with chronic diseases of the immune system, wherein a Fc receptor according to any one of claims 1 to 5 is used in a competitive

immunoassay and the amount of the corresponding sFcRs in the blood, plasma or serum of a patient is determined.

16. Process according to claim 15, wherein the chronic disease is AIDS, SLE, MM or rheumatoid arthritis.

17. Use of a recombinant soluble Fc receptor according to any one of claims 1 to 5 for the screening of substances in view of their ability to act as inhibitors of the recognition and binding of antibodies to the respective cellular receptors.

18. Use according to claim 17, wherein recombinant soluble FcγRs are used and recognition and binding of IgG antibodies is of interest.

19. Pharmaceutical composition containing as active agent a recombinant soluble FcR according to any one of claims 1 to 5.

20. Pharmaceutical composition according to claim 19 for use in the treatment or prevention of autoimmune diseases, allergies or tumor diseases.

21. Pharmaceutical composition according to claim 19 or 20 for use in the treatment of AIDS, rheumatoid arthritis or multiple myeloma, containing a recombinant soluble FcγR preferably having the amino acid sequence as shown in SEQ ID NO:1.

22. Crystalline preparation of a soluble recombinant Fc receptor according to claims 1 to 5.

23. Crystalline preparation of a soluble recombinant Fc receptor / immunoglobulin complex.

24. Use of a crystalline preparation of a recombinant soluble Fc receptor according to any one of claims 1 to 5 for the generation of crystal structure data of Fc receptors.

25. Use of a crystalline preparation of a soluble recombinant Fc receptor / immunoglobulin complex for the generation of crystal structure data of receptor / Ig complexes and their respective binding sites.

26. Use of crystal structure data obtained by the use according to claims 24 or 25 for the identification and/or preparation of Fc receptor or immunoglobulin inhibitors.

27. Use of crystal structure data obtained by the use according to claim 25 or 26 for the identification and preparation of new antibody receptors.

28. Use according to any one of claims 24 to 27 in a computer-aided modelling program.

29. FcR inhibitor characterized in that it has a three-dimensional structure which is complementary to the recombinant soluble FcR according to any one of claims 1 to 5.

30. Immunoglobulin-inhibitor, characterized in that it has a three-dimensional structure which is complementary to an Fc receptor binding site of an immunoglobulin.

31. Pharmaceutical composition containing as active agent a FcR inhibitor according to claim 29.

32. Pharmaceutical composition containing as active agent an immunoglobulin inhibitor according to claim 30.

33. Pharmaceutical composition according to claim 31 or 32 for use in the treatment or prevention of diseases which are due to overreactions or faulty reactions of the immune system.

34. Pharmaceutical composition according to claim 31, 32 or 33 for the treatment or prevention of allergies, autoimmune diseases or an anaphylactic shock.

35. Use of a molecule for the modulation of the interaction between Fc receptor and immunoglobulin, characterized in that the molecule is designed or identified using crystal structure data obtained from crystalline preparations according to claims 22 or 23.

36. Use according to claim 35 wherein the modulation is partial or complete inhibition of binding between Fc receptor and immunoglobulin.

37. Fc receptor according to claims 1-5, bound to a solid phase.

38. Fc receptor according to claim 37, wherein the solid phase is a chromatography carrier material.

39. Use of a chromatography carrier material according to claim 38 for the adsorption of immunoglobulins from the blood, plasma or serum of a patient or from culture supernatants of immunoglobulin producing cells.

40. Use according to claim 39 for the enrichment of antibodies from a patient's blood, serum or plasma or from culture supernatants of immunoglobulin producing cells for the conduction of further tests.